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Bulletin of
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THE DIAGNOSIS AND TREATMENT OF BRAIN TUMORS*

BY I. S. WECHSLER, M.D.

New York

The subject of brain tumors has grown considerably in importance in the past two decades. The impression may be that they are rare; actually they are very common, perhaps more common than most other organic brain diseases, excepting of course syphilis and the convulsive state. It may be that we are more skilled and expert in diagnosis, but there is a body of opinion which holds that brain tumors actually are on the increase. There is hardly a week that I do not see one, two or three cases. If the neurologist sees them the general practitioner too must, and it is only a question of recognition. They are common at all ages. I have seen one in an infant of five weeks. It used to be said that they are more common in children, but I doubt it. It is not so much the incidence as the type of tumor and its location that varies with age.

The mortality used to be as high as 30 to 50 per cent either at operation or soon after it. Today the operative mortality is as low as 10 per cent or less. Much depends, of course, on the type and location of the tumor and on the skill of the surgeon. Cushing reported a series with a mortality of 6 per cent. Operations for trigeminal neuralgia have practically no mortality. Frazier reported a succession of 600 cases without any fatality. Brain tumors still offer a bad prognosis but they are not quite so hopeless as formerly.

Time was when we were satisfied with making a general diagnosis of tumor. This is no longer enough. Today we want to know precisely where the tumor is and what is the nature of it. A skilled diagnostician should be able to say with a fair degree of certainty in 90 per cent of cases that there is a tumor. In about 80 per cent of cases

*Lecture delivered at the second annual Postgraduate Course in Neuropsychiatry, The Menninger Clinic, Topeka, Kansas.

he should be able to localize it fairly accurately, and in the majority of instances he should venture more or less accurately a pathological diagnosis. For instance, one should be able to predict whether the tumor is an astrocytoma, a glioblastoma, a medullablastoma, an angioma, or a meningioma. Obviously if one can say that a patient has a large infiltrating glioma of the left side of the brain, one would hardly risk its removal; whereas if one is fairly certain that it is a meningioma, operation may result in permanent cure. But even in tumors which are not completely removable operation may not only save life but restore good health and even usefulness.

For diagnostic purposes a brain tumor may be defined as a new growth which encroaches upon the contents of the cranial cavity. If a patient has a pituitary tumor that does not break through the sella into the cranial cavity he has not a brain tumor. A tumor may grow in the brain itself or grow into it from the meninges, skull, or vessels. Practically every kind of tumor can grow within the brain. Gliomas are the most common. Some are metastatic, and it is well in adults or people past middle age to look for a primary source in the prostate, thyroid, chest or gastro-intestinal tract, in cases where the tumor seems to be growing rapidly.

Three general facts are worth bearing in mind in the matter of diagnosis. First, the skull is an inelastic capsule of fixed capacity. Second, the brain is an organ which has numerous localizable specific functions. Third, there are two types of circulation in the brain, namely, the blood and cerebrospinal fluid. Now, if you disturb the delicate relationship between the fixed capacity of the skull and the contents of the cranial cavity certain general symptoms must result. The skull has just so much capacity; it can yield a little bit; the blood and the spinal fluid circulations can yield a little; but if the balance continues to be upset general symptoms must appear. Similarly, if the tumor compresses certain parts of the brain local signs and symptoms set in. Motor and sensory signs of a focal nature, visual, auditory or aphasic disturbances, cerebral nerve involvement or ataxia, each speaks for a particular location.

The two sets of symptoms, then, are general and focal. Some tumors manifest themselves first by means of general symptoms, and it is not necessary to wait for focal symptoms to make a diagnosis or institute treatment. Others show only focal signs and symptoms, and

if you wait for the advent of general ones before operating it may be too late. Generally speaking, brain tumors give rise to both general and focal symptoms. Interference with the two circulations in the brain disturbs the intracranial pressure, from which many of the general symptoms result. This is particularly true of the cerebrospinal fluid pressure. This fluid, as you know, runs in a closed set of cavities in a system more or less all its own. The circulation of the spinal fluid is in one direction. Probably it is secreted by the choroid plexus into the lateral ventricles. From there it flows into the third ventricle, the aqueduct of Sylvius and the fourth ventricle to the base and surface of the brain. If there is interference with this one-way circulation, the cerebrospinal fluid is dammed back and it causes increased pressure within the skull. The further dorsally the interference is, the greater is apt to be the increase in pressure. That is, the result is an internal hydrocephalus. This is particularly true if there is blocking of the aqueduct of Sylvius.

General symptoms include headache, a persistent, severe, throbbing, nagging headache which does not easily yield to medication. Some patients have no headache. The more intracranial pressure there is, the more likelihood of headache. Dizziness is another general symptom. The vertigo can be very distressing. Lesions of the posterior fossa are more likely to cause dizziness because of disturbance of the vestibular apparatus. Vomiting is the third general symptom, again more common in posterior fossa lesions. Vomiting may be absent, and when present it need not always be projectile in nature.

Mental symptoms are not uncommon in tumors of the brain. They range all the way from the "psychoneurotic" to the "psychotic." Dr. Leo Stone mentioned the patient who was treated as a psychoneurotic when he had a brain tumor. Some patients with tumor have only general mental symptoms. These symptoms can occur with a tumor in almost any location, even in the posterior fossa, but they are most common in lesions of the frontal lobes and of the corpus callosum. The mental symptoms vary: there may be disturbances of consciousness, such as want of attention, dullness, drowsiness and stupor, or a general slowing down of the personality. There may be psychotic manifestations with delusions, hallucinations, character and personality defects, facetiousness and a tendency to jocularity. Mental symptoms may be the only manifestations of brain tumor, without choked disc

or anything else, and it is in those cases that errors in psychiatric diagnosis are possible. If a patient, who has been well previously, develops psychoneurotic symptoms or mild personality changes, it is well to think of general paresis and brain tumor. Ordinarily adults do not suddenly become neurasthenic or hypochondriacal or change their personality.

Convulsions are another group of symptoms which may have either general or special significance. The Jacksonian fit has special localizing value; the generalized convulsion may or may not have localizing significance. A grand mal attack may occur from a lesion almost anywhere in the brain. Tumors of the temporal lobe commonly give rise to convulsions. So do tumors of the motor areas. In the latter instance they are more apt to be focal or Jacksonian, at least in the beginning. For instance, if there is irritation in the motor leg area of the brain a convulsion will occur in the leg of the opposite side. Jacksonian convulsions are not accompanied by unconsciousness. A Jacksonian fit may be the beginning of a generalized convulsion.

Perhaps the most important and pathognomonic general sign of tumor of the brain is choked disc or papilledema. It may occur in other than expanding lesions, but it is significant of brain tumor in practically 90 per cent of cases. It can occur in inflammatory conditions, in fracture of the skull, in subdural hematoma, abscess of the brain, and hydrocephalus. Choked disc probably is the result of damming up of the spinal fluid and the consequent internal hydrocephalus, more particularly increased intra-ventricular pressure. Tumors anywhere may cause choked disc, but it is most common in posterior fossa lesions or such tumors as compress the aqueduct of Sylvius and the third ventricle. Slow pulse frequently is a sign of increased intracranial pressure.

Focal signs obviously reflect injury to particular regions of the brain. The association of general symptoms and focal signs make the diagnosis most likely, although general mental symptoms and focal signs often point to an organic psychosis, such as paresis or cerebral arteriosclerosis. What are the focal signs and symptoms which characterize the different parts of the brain? Tumors of the frontal lobe are frequently characterized by general mental symptoms. These may consist of inability to concentrate, lack of interest, mental obtunding, behavior out of keeping with previous ways, defects in the intellectual

or emotional spheres, and facetiousness or *Witzelsucht*. The patient does not realize the seriousness of his condition; he may transgress social and moral codes. These symptoms may persist for a long time, and if choked disc be absent the patient may be regarded as psychotic.

Tumors on the under surface of the frontal lobe will compress the olfactory bulbs and interfere with the sense of smell. Pressure on the optic chiasm may give rise to visual disturbances or even blindness, hemianopic field defects and optic atrophy with pallor of the discs. Focal convulsions may occur from extension to the motor region.

Temporal lobe lesions, if left-sided, give rise to aphasia. Convulsions are rather common, and quadrantic or hemianopic field defects not rare. Interbrain tumors and neoplasms in the pituitary region sometimes cause disturbances of vegetative functions, often of water and fat metabolism, and of the sleep mechanism. Ocular palsies and visual disturbances are obviously the result of pressure on the nerves at the base of the brain in the middle fossa. Posterior fossa tumors are somewhat less difficult to diagnose. They are generally characterized by signs of increased intracranial pressure, namely, choked disc, headache and vomiting. Cerebellar tumors give rise to ataxia, at first ipsilateral, on the side of the lesion. The ataxia may be bilateral.

Acoustic neuroma generally begins with deafness in one ear, preceded by subjective noises for months or even years, all depending on the rapidity of the growth. As the eighth nerve really consists of two nerves, namely, the acoustic and the vestibular, each with its own separate function, disturbances of equilibrium soon appear. Dizziness, nausea and vomiting, falling, past-pointing and nystagmus point to vestibular disturbances. Very often the otologist sees the cases before the neurologist. Facial palsy is a somewhat later sign. Choked disc is apt to appear late in acoustic and cerebello-pontine angle tumors, and one need not wait for it to make a diagnosis. If one does, the tumor may be so large as to make removal both difficult and dangerous.

Other aids in diagnosis are x-ray of the skull, lumbar puncture, and air injection into the ventricles. Both encephalography (air injection via the spinal canal) and ventriculography (injection via trephine openings in the skull) give a great deal of information. The spinal fluid sometimes is of diagnostic help. Increase of protein and no cell increase may be of significance. Generally speaking lumbar puncture

is not dangerous in brain tumors, but it may be in posterior fossa lesions, and should be done carefully. Ventriculography is somewhat less dangerous than encephalography, but both may be difficult and generally make the patient quite sick. The use of oxygen instead of air minimizes the reaction. One should be prepared to operate if necessary immediately after air injection. Although injection of air is of tremendous importance in diagnosis and gives much information, one should try to make a localizing diagnosis without it if possible. The mortality from air injection in tumors of the brain used to be 3 or 4 per cent, now I believe it is less than 1 per cent. There is practically no danger in encephalography for other conditions.

Ordinary x-ray plates of the skull frequently give a great deal of information. Calcification of an astrocytoma, a hemangioma, a cranio-pharyngioma or in the choroid plexus can be of great diagnostic value. Shifting in the position of a calcified pineal is of very great aid. Meningiomas often show increased vascularity and the presence of exostoses. The x-ray films may show signs of increased intracranial pressure, although their absence does not speak either against its presence or that of a tumor. The size and shape of the sella obviously are of much significance. A good film of the optic or acoustic foramen can be of great help in localization. Electroencephalography promises to be of help in the localization of lesions, but it is somewhat early to speak with assurance.

The treatment of tumors of the brain essentially is surgical. Tumors of the pituitary may yield sometimes to x-ray therapy. No chances of operative removal should be sacrificed once the diagnosis is made. At any rate every patient with brain tumor should have the benefit of the opinion of the surgeon. It is for him to decide whether and when to operate and what technical procedure to follow. Much depends of course on the skill of the operator. At all times is it to the interest of the patient that the neurologist and neurosurgeon cooperate fully. In case of completely removable tumors, such as meningiomas or acoustic neuromas, cures are frequent. But even in non-removable tumors life is often prolonged and frequently made tolerable. Decompression operations often relieve general symptoms, particularly headache, vomiting and choked disc. Medicinal treatment is essentially palliative and generally of no avail.

QUESTIONS

Question: Would it be wise to do a lumbar puncture on a man whose vertigo was so severe that he had to get about on the floor?

Dr. Wechsler: It depends what the vertigo is due to. In itself it is no contraindication. There is risk in case of increased intracranial pressure from posterior fossa tumors where the vertigo is very pronounced.

Question: If you made a diagnosis of metastatic brain tumor which is fairly certain and the patient had no metastases anywhere else would you advise operation?

Dr. Wechsler: Up to a year or two ago I would have said, "No." Metastatic tumors are usually multiple and therefore inoperable. But there may be only one nodule, and so I changed my mind. A patient, who had a carcinoma of the breast removed several years back, began to have focal symptoms, headache, vomiting and mental dullness, etc. Just to relieve her distress I suggested operation. The surgeon removed the tumor and the patient was relieved and made comfortable. Maybe she has more foci but so far she is still well. Naturally one must judge every case on its own merits.

Dr. Karl Menninger: You have undoubtedly seen brain tumors and severe neuroses in the same individual. Would you express yourself as to the relative frequency of such a combination? We are interested in the fact that they frequently do occur together in persons without previous evidence of tumor.

Dr. Wechsler: I have seen the combination, and the question naturally arises as to their relationship. In view of the frequency of neuroses chance association is perhaps the one explanation. Tumors may for a long time manifest themselves as neuroses. I once saw a patient who had a compulsion neurosis for two years before tumor symptoms appeared. The tumor was not even suspected until one day he began to have headache and choked disc. The personality reaction of a patient may possibly color some of the mental symptoms, as it does in paresis, for instance. But whether there is any relationship between tumor and neuroses I do not know. My friend, Dr. Davidoff, made the observation that some cerebellar tumors occur in children of a certain personality make-up but he, too, does not know what the relationship is, if any.

Dr. Karl Menninger: We know physical disease is five or ten times as common in non-psychotic patients as in psychotic. Brain tumor then should be less frequent in neurotics than in others. I wonder if you have an idea as to whether that is true.

Dr. Wechsler: That is true. Most patients with brain tumor give no history of psychoneuroses. I fear that I have not enough knowledge of this phase of the subject even to speculate.

REACTIONS OF PSYCHIATRIC PATIENTS IN A FRUSTRATING SITUATION*

By J. F. Brown, Ph.D.

INTRODUCTION

Nearly all modern psychological theories suppose that personality structure is to some extent determined by the individual's reactions to frustration. When one considers the important rôle which frustration plays in modern psychological theory it is remarkable how little work has been done with it in experimental situations. To be sure when psychologists set up learning experiments they usually are observing behavior in a frustrating situation. Since, however, the learning experiment is concerned chiefly with the establishment of specific motor and verbal skills rather than with the underlying emotional behavior we may overlook the experiments on learning in both animals and men. While a number of interesting experiments involving complete frustration in animals have been reported,[14] the literature on the experimental study of frustration in humans is very meager. The experiments of the Watsons[18] on emotional responses in children, of Dembo[7] on rage in normal adults, of Barker, Dembo and Lewin[3] on regression in frustrating situations and of Rosenzweig[16] on types of reaction to frustration about complete the list. It is particularly remarkable that no systematic experimental studies of the reactions of psychiatric patients to frustration have been undertaken. Theoretically the various psychiatric categories represent types of adjustment of the total personality to frustration. From observations on the reactions of psychotic and psychoneurotic subjects to frustration in a controlled situation we could expect two results of theoretical importance. In the first place, certain relationships between symptoms and the habitual response to frustration might be uncovered. In the second place we might find valuable leads as to the nature of the personality structure in the various diseases. In addition to the theoretical interest of our problem, such observations might have practical diagnostic and prognostic value for the individual case.

* Presented at the Chicago Psychological Club, December 2, 1938.

With these points in mind we began observations on the reactions to a frustrating situation of patients admitted to the Menninger Sanitarium. In planning our experiments we were concerned with avoiding two errors generally made by psychologists when experimenting with psychiatric subjects in the past. First, since mental illness is a readjustment of the total personality rather than the pathology of isolated psychic functions, we chose to investigate a simple but integrated total behavioral reaction to frustration. This of course made it impossible to duplicate the technical precision of many laboratory investigations on isolated functions.

Again, most early investigations of the emotional responses of psychiatric patients dealt only with stimuli which had little or nothing to do with the patients' actual emotional conflicts in real life. Subjects were shown disgusting or pornographic pictures, disturbed by sudden loud noises, read fictional passages and the like. [Cf. the resumé of this work in Dunbar.[8]] We were concerned with finding a situation in which emotional behavior developed as a spontaneous and real experience rather than as a response to a laboratory set-up.

Lewin[13] and the writer[5] have recently pointed out methodological reasons for believing that a hopeful approach in the field of experimental psychopathology lies in combining the experimental approach of topological psychology with the clinical approach of psychoanalysis. In investigating the reactions of psychiatric patients to a frustrating situation we were also concerned with finding techniques which would enable us to utilize such well-known concepts as isolated tension system, psychological departure, level of aspiration, and social pressure[12] in patients in whom the psychoanalytic mechanisms were at least partially known. The patients at the Menninger Clinic furnish an excellent material for this purpose as all case histories are worked up from the psychoanalytic standpoint and many of the patients undergo psychoanalytic treatment.

The desire to use a total integrated behavior, similar to a real life situation, which would also enable us to explore the possibilities of cooperative research between topological psychology and psychoanalysis all entered into our choice of an experimental procedure. In developing a new field it is also advantageous to see many subjects exhibit a rather wide range of behavior than to observe limited behavior in but few. To do this precluded the precise laboratory investi-

gations of each aspect of the problem by truly experimental methods. The data now to be reported are gained from observations in a controlled interview situation rather than from experiments in the technical sense.

METHOD

The technique, modified from experiments by Dembo[7], has been described in some detail in an earlier paper[4]. The subject is given a simple problem for which two different solutions are possible. After the subject finds the two possible solutions, he is instructed to find a third solution although no third solution exists. The subject is told he must strike a note on a piano without having his feet cross a line marked out on the floor. The piano cannot be reached by the subject while standing, but may be reached if he kneels on the floor and leans over (the first solution), or if he uses an available chair as a bridge (the second solution). A toy piano within easy reach is always present. (cf. below). Nearly everyone discovers these solutions within the first few minutes. Those who fail to do so are given a sufficient hint. (cf. below). The subject is then informed that there is a third solution and the frustrating situation is established.

From this point in the experiment, all the behavior of the subject is carefully noted. After about ten minutes the experimenter remarks without particular emphasis: "This third solution is considerably harder. Only forty per cent of the subjects get this solution, while nearly everyone gets the first two." This remark enables us to gain some insight into the effect of social pressure on the subsequent behavior. After unsuccessfully trying for twenty minutes the experiment is interrupted with the remark: "I have some general questions to ask you. Let me do this now. Perhaps if you occupy your mind with something else for a while the solution will occur to you." The questions asked are concerned with the patient's present mood, reactions toward other patients, activities in the Clinic. Nothing of direct bearing on the patient's illness is asked.* This interruption enables us to note the ease with which the patient changes activities and the manner in which he returns to the main task. If the patient returns spontaneously or under pressure from the experimenter after the interruption, other interruptions are introduced after ten minute periods. These interruptions are given by asking the patients to do other simple tests and problems. For those patients who have not

* It is unavoidable in some cases to prevent the patient from talking about his case. So far as possible, however, the experimenter holds the subject to the routine questions.

previously terminated the experiment on their own account three such interruptions are given. Upon the third one the experimenter terminates the experiment by admitting there is no third solution.

Upon termination of the experiment the complete introspections of the patient are taken. He is specifically questioned on feelings of blame and guilt with regard to the experiment, whether or not he considers that his reactions to frustrating situations in real life approach the behavior shown in the experiment, what his feelings were

TABLE I
Profile

1. Behavior towards problem	1	2	3	4 X	5
	No cooperation				Complete cooperation
2. Time for solution	15		10 X		5
3. Manner of solution	1	2	3	4	5
	Shown without insight				Insight
4. Method of resumption	1 X		8		15
	Refusal				Repeated automatic
5. Psychological departure:			X		
A. Attempted phantasy solution	1	2	3	4	5
	Much				None
B. Flight from situation	1	2	3 X	4	5
	Complete				None
6. Tension	1	2	3	4 X	5
	Apathetic				Much
7. Aspiration	1	2	3	4 X	5
	Don't want				Must
8. Effect of competition	1	2	3	4	5
	Down				Up sharply

9. Blame: *Sit.*
10. Nearness to life: *D*

toward the experimenter during the experiment, his reactions to his hospitalization. The patient's assistance is also asked in interpreting any ambiguous behavior during the experiment. For patients undergoing psychoanalysis, the contemporary stage of the analysis is noted. The average time consumed in the experiment is slightly under an hour. The time range is of course wide. Some catatonic patients required but very few minutes, some compulsion neurotics required over two hours.

On completion of the experiment and before the experimenter consulted the findings of the clinical psychiatric examination the chief

results of the experiment were tabulated as profiles as shown in Table I. This is done to get as objective designations of behavior as possible. Although the complete protocols and case histories are used to suggest further research, we consider our results should be given in as objective a fashion as possible. The profile contains ten behavioral categories, some of which may now be considered as standardized and rather highly objective, others of which are still quite dependent on the subjective impression of the observer. The point values of the individual rating scales are highly arbitrary. In general we have taken five-point scales and tried to differentiate behavior into five degrees of the category in question. (Cooperativeness, relative insight, etc.) Also we have usually taken the high score to mean the most "adjusted," i.e. closest to "normal" behavior. The relative objectivity of each category will be discussed in the following explanatory paragraphs. In Table I the profile of a paranoid schizophrenic patient is shown by the use of crosses. We will report the actual behavior of this patient to illustrate the use of the profile.

1. *Behavior towards problem.* We are here interested in whether the subject shows an honest desire to cooperate and accepts the problem as a real one. The score of 5 indicates complete cooperation, i.e. acceptance of the problem such as one would expect in a student coming to an examination. The score of 1 indicates failure to accept the problem at all at first, i.e. such behavior as one would expect in a mutistic catatonic patient: 4 indicates some preoccupation with other affairs or inability to cooperate fully because of anxiety or depression: 3 means less cooperative than 4: 2 means less cooperative than 3 without being wholly uncooperative. The patient shown receives 4. He says "Yes I will try your problem, if you tell Dr. —— something for me." Then before he really starts on the problem he says: "Is this a trick to keep me here longer?" However he soon begins to work on the problem. Although this category requires considerable subjective evaluation, we believe the differences in opinion between observers would probably not vary more than one point here.

2. *Time for solution.* This is the total time spent between starting the first and third solutions to the problem. This was noted as a rough measure of intelligence and of general psychomotor reaction time. The subject here scores 12. He found the direct solution in four minutes. He worked five additional minutes unsuccessfully on the second solution. Three minutes were consumed trying to give him hints before the second solution was shown him. The scale is of course completely objective.

3. *Manner of solution.* If both possible solutions are gained within the time limits in an insightful fashion by the patient the arbitrary score of 5 is assigned. Two points are subtracted for each solution which the experimenter must show the patient. One point is subtracted for each solution where a hint is necessary. A typical hint is: "Consider your body as something which can be differently located in space by use of your joints." Such a remark is for the direct solution. "When are tools necessary?" is a typical hint for the solution requiring use of a tool. A score of 4 indicates that one hint was necessary: 3 means that either two hints or one demonstration was necessary: 2 that one hint and one demonstration was necessary: 1 that it was necessary to demonstrate both solutions. The patient here got the first solution and was shown the second so the score is 3. The scale is fairly objective. Some unreliability is undoubtedly introduced by the manner in which the experimenter gives hints.

4. *Method of resumption.* This scale refers to the frequency and manner of resumption of the main task after interruption. The score is arbitrarily set at 4 for each automatic resumption on the part of the subject: 3 is given when resumption occurs on the reminder of the experimenter that the problem is not yet solved: 2 when the experimenter directly requests the resumption: 1 when the subject refuses to resume the task after the interruption. Each interruption is scored separately. The patient here scores 6: 4 for an automatic first resumption and 2 for a second resumption on the request of the experimenter. He gives up before a third interruption is undertaken. The scale is fairly objective. Again certain unreliability is undoubtedly introduced by the manner of the experimenter's reminders and requests.

5. *Psychological departure. A: Attempted phantasy solutions to the real problem.* By psychological departure is meant any departure from the situation in a "psychological" way, i.e. through attempting phantasy solutions or through day dreaming about other problems. The toy tennis racket and the toy piano were used in the problem to serve both as substitute goals and as stimuli to incite phantasy or substitute solutions to the problem. The preoccupation of the subject with the substitute stimuli or the report by him of phantasy solutions was carefully recorded. When no such behavior was shown the score of five was arbitrarily assigned. For each incident of phantasy behavior, (such as "I will hypnotize it over" or "I will cut off my feet and crawl to it" or "the little piano will grow up if I wait long enough") and for each incident of behavior with the substitute goal one point is subtracted from the score of 5.* Here our expectations that such behavior would be frequent were not fulfilled. To all intents and purposes normal individuals showed no such behavior

* Asking whether the substitute goal had something to do with the problem was not counted as nearly every subject noted its presence.

and the psychiatric subjects showed it rather infrequently. There were some exceptions to this. The patient here scores 3. He phantasies an invention which "could strike the note by electrical control" and says, after striking a note on the toy piano, "This one would suit me as well as the other." The scoring is of course arbitrary but reasonably objective.

5. *Psychological departure. B: Flight from the situation.* Here was noted every behavior of the individual which indicated a psychological departure from the situation through daydreaming or through attempting to engage the experimenter in conversation about matters other than the problem at hand. When no such behavior is shown an arbitrary 5 is assigned. For each such behavior one is subtracted. The patient here scores 3. On two different occasions he tried to engage the examiner in conversation, once about certain "injustices" he had suffered in the outside world, once about the "injustices" he was suffering from one of the staff doctors. Like the scoring on 5 A this is reasonably objective but highly arbitrary. In both cases only the incidence of "departures" rather than their psychological significance for the individual are noted.

6. *Tension.* Here we are interested in the development of disorganized or diffuse behavior which may indicate internal emotional tension. We observe the rise of emotional tension rather than the tension which the patient shows habitually as a part of his illness. Indicative of increasing tension are inability to sit still, walking around, smoking, cursing, actual aggressive outbursts against the situation or the experimenter. When initial signs of tension actually subsided in the experiment the arbitrary score of 1 was given: when no signs of increasing tension were noted the arbitrary score is 2: with slight increase as indicated by fidgeting, smoking, etc. the arbitrary score is 3: a considerable increase as indicated by inability to sit still, continuous smoking or playing with hands scores 4: great increase as indicated by cursing, aggressive outbursts, actual agitation scores 5. The patient in question scores 3 in that he walks around and smokes several cigarettes. This scale is only a semi-objective rating scale. Different observers might disagree as much as one point but would probably not disagree as much as two.

7. *Aspiration.* Here is meant the level of aspiration or the patient's demands on himself with regard to finding the third solution. 1 is arbitrarily assigned to those patients who wish to fail: 2 is assigned for indifference: 3 for "would like to succeed": 4 for "really anxious to succeed": 5 for "really must succeed." The ratings are made on the basis of the patient's introspections. The patient chosen for illustration is marked 3.5, his subjective feelings falling between 3 and 4. In those cases where through mutism or agitation, no subjective estimate by the subject was possible the experimenter made the rating on the basis of his observations. The method of scoring is quite subjective but gives us an important psychological datum.

8. *Effect of competition.* We are here interested in the effect of the suggestion, "Only 40% get the third solution" on the level of aspiration of the patient. This information is gained partially by observing the reactions to the suggestion and partially by the later introspections of the patients. Here 1 is assigned when the level of aspiration falls on competition ("I couldn't possibly be in the upper 40%, I might as well give up"): 2 is assigned when level of aspiration is unaffected: 3 when there is some rise: 4 for a sharp rise: 5 for a feeling of "must" ("I have to be in the upper bracket," "If only one percent of these people here got it I'd be one of them"). The patient here was given a score of 4. ("In real life I'd feel I must get it. Here I want very much to be in the upper group.") The method of scoring is again quite subjective but again gives us a real psychological datum.

9. *Blame.* The patient is asked whom he blamed for his failure and how he felt concerning his failure. Here of course one gets a wide variety of response. The data are reported as falling into four categories. *N* indicates no one—the patient felt neither blame nor guilt feelings. *S* indicates self—the patient blamed himself or felt guilty because he couldn't get it. *Sit* indicates situation—the patient blamed his hospitalization, the experimenter, or his sickness. *M* means meaningless—the question made no sense to the subject. The rating of the illustrative patient is here *Sit*. ("I would not have failed in a real situation only the injustices of this hospital made me fail.")

10. *Nearness to life.* The patient is asked on conclusion of the experiment whether he feels that the behavior he has exhibited in the experiment is similar or dissimilar to his real life reactions to frustration. Here again there was a wide variety of response. The responses could be roughly classified as: *A*, i.e. affirmed in general; *D*, i.e. denied in general; or *M*, i.e. meaningless in the sense used above. The illustrative patient here denied sharply that his real reactions to frustration were similar to those in the experiment.

The above paragraphs should indicate to the reader something of the types of behavior shown and the method used in evaluating them. The question arises, do frustrating situations always give rise to frustration? We have sought to put the subject in a blocked goal situation. Whether or not such a situation really frustrates the individual depends of course, on the nature of his drive to the goal. By a frustrating situation we mean one in which the adjusted individual should shows signs of frustration. Whether or not we actually frustrated some groups—the schizophrenics for instance—does not primarily concern us. We are concerned with the behavior shown in a situation which *normally* is a frustrating one. Consequently we refer to reactions to a frustrating situation rather than reactions to frustration.

At the present time the test has been administered to some 183

individuals. The test is given so far as possible during examination of all newly admitted patients.* It is further desirable to test the individuals soon after admission in order to prevent other patients from telling them about the "trick" of the problem, and in order that the experimenter's observations will not be colored by knowledge of the clinical case record. In some cases, however, it was only possible to test the patient some weeks after admission. In only three cases had the subject heard of the "trick" of the problem and in only two did the patient convince himself that there was no third solution. These cases are of course not considered in the data.

TABLE II

Classification of Cases

Group	I.	Control group: sophomore students	20
Group	II.	Schizophrenics (other than paranoid form)	34
Group	IIA.	Group II without clinically atypical patients	27
Group	III.	Paranoid schizophrenics	16
Group	IV.	Manic depressive (manic)	5
Group	V.	Manic depressive (depressed)	11
Group	VA.	Group V without clinically atypical patients	7
Group	VI.	Manic depressive (mixed or agitated)	6
Group	VII.	Hysteria including pathoneuroses and neuraesthenia	10
Group	VIII.	Obsessional-compulsion neuroses	17
Group	IX.	Neurotic depression	10
Group	X.	Neurotic character	12
Group	XI.	Chronic alcohol addiction	33
Group	XII.	Essential hypertension	9
	Total		183

Table II gives a psychiatric classification of the subjects tested based on the psychiatric diagnoses as reached in staff conference. Several points need some elucidation.

The control group was made up of twenty sophomore students from the writer's elementary psychology course. They came as voluntary subjects to avail themselves of the opportunity to take part in a psychological experiment. All of the members of one elementary lecture section agreed to take part. They represent a very homogeneous age, and educational group, and have a certain similarity of interests.

* It is contraindicated of course for extremely agitated and non-ambulatory patients.

For this reason we can not accept them as a fair sample of the total adult "normal" population. They do represent a fairly well adjusted group psychologically.

At the Menninger Clinic the diagnosis of schizophrenia is usually only subdivided into paranoid and nonparanoid categories. Consequently we have not separately treated hebephrenia, catatonia and simple forms. Group II A excludes those schizophrenic patients who were either recovered, remarkably improved or who had not yet developed the acute psychotic episode at the time of testing. It consequently may be considered more representative of schizophrenia than Group II. This procedure was again adopted with regard to Group V. Group V A represents only acute psychotic depressions.

Group VII includes all the cases of psychoneurosis where the complaints were chiefly somatic as opposed to Group VIII which includes the psychoneurotics whose complaints were chiefly psychic. There were not enough cases to warrant separate treatment of all the finer shades of psychoneurotic diagnostic categories.

Group XII represents a special group of research cases on essential hypertension for whom the chief clinical findings have already been reported by Karl Menninger.[15] The other groups should be adequately characterized by the given diagnoses. Although the test is also given to patients with demonstrable encephalopathies and organic psychoses, we have not yet seen enough of these cases to warrant reporting them in this paper.

Inspection of Table II indicates marked discrepancies between the incidence of cases in the various categories. This comes from the fact that incidence of admission for the various categories is highly variable. Some categories, such as schizophrenia and chronic addiction to alcohol include enough cases to warrant statistical treatment. Others such as manic-depressive psychosis, manic phase, and hypertension contain far too few cases to warrant statistical treatment. For this reason the statistical data reported in the following section are not examined from the standpoint of the theory of sampling. Certain means are probably reliable, others may shift sharply with the acquisition of more data. We must also not forget that subjective factors enter into many of the behavioral ratings. The only excuse for tabulating the results statistically at all is that by so doing a considerable amount of protocol data may be condensed into little space.

RESULTS

In the present report we shall be concerned with the type and variability of behavior shown by each psychiatric category. There would be certain undoubted advantages in starting with the behavior of the individual subjects in the experimental situation and attempting classification of reactions on this basis, without regard to clinical diagnosis.* The existing psychiatric diagnostic categories are probably based more on descriptive symptomatology than on underlying psychodynamic processes. Furthermore, as all psychiatrists know, assignments of diagnoses to many cases are faulty. The whole problem of nosology undoubtedly needs clarification and any experimental method which could help with this clarification should be exploited. We believe that the reactions of patients to a frustrating situation undoubtedly can be utilized to lead to nosological classification and in later publications we shall go into this aspect of the problem. In presenting the first results however we believe classification of reactions in terms of existing diagnostic categories will better serve our purposes.

Table III gives the mean scores and variability coefficient for each of the groups for each of the scores.†

Examination of the actual distributions of scores for each group indicated rather marked discontinuities in many cases and the lack of clear cut central tendencies in others. This is partially shown by large variability coefficients, but even these do not show anything in detail about the distributions. Statistical measurements of variation may be equal whether caused by a wide normal scatter, or by a few markedly atypical cases. In order to give a fairer picture of variability than is afforded by the variability coefficients without giving complete distributions for each psychiatric category we tabulated the results given in Table IV. Here the ranges between set points for all the different behavioral categories are given in percentages of the group in question.

Tables III and IV combined show us the average scores, the varia-

* This was pointed out to me by Drs. Karl Menninger and Robert Knight.

† The variability coefficient is calculated by the following formula: V.C. = Average Deviation/Average × 100. In other words it represents what percentage the average deviation is of the average. It is used rather than average or standard deviation since we are interested in comparative rather than absolute variability.

TABLE III

Showing Mean Scores and Variability Coefficients

The columns with Roman numerals refer to the designations of Table II, the rows with Arabic numerals refer to the designations of Table I. In each of the rows the upper figure indicates mean score, the lower figure the variability coefficient. The answers for items 9 and 10 are tabulated under the designations given above. In some categories the total cases reported under 9 and 10 do not agree with the totals reported in Table II. This is because items 9 and 10 were first considered after a certain number of cases were tested.

		I	II	IIA	III	IV	V	VA	VI	VII	VIII	IX	X	XI	XII
1		4.9 02	3.9 15	3.8 16	3.9 18	3.8 13	4.4 11	4.1 07	4.3 07	4.8 06	4.7 06	4.7 08	4.7 06	4.7 09	4.9 02
2		6.4 53	9.8 39	10.2 37	8.9 34	6.6 23	6.5 35	8.7 31	7.8 39	9.0 35	5.6 14	8.9 35	6.6 23	7.1 35	7.3 30
3		4.6 11	3.6 31	3.5 31	3.8 24	4.4 11	4.5 16	4.4 19	4.3 14	4.2 12	4.7 06	4.5 09	4.6 09	4.5 16	4.6 09
4		9.7 38	4.1 53	3.6 53	5.8 25	3.0 40	5.6 46	5.2 54	5.2 56	6.6 49	10.4 20	6.8 53	6.3 44	5.5 49	7.3 35
5A		5.0 00	4.7 11	4.7 11	4.7 11	4.5 15	4.5 11	4.8 06	5.0 00	4.8 06	4.5 13	4.4 13	4.5 16	4.8 06	4.7 09
5B		4.9 03	3.1 32	2.9 31	3.4 24	4.1 22	4.0 25	3.9 28	4.1 20	4.3 14	4.5 13	4.6 13	4.6 09	4.8 06	4.5 11
6		3.2 22	2.3 25	2.3 25	2.7 22	3.0 13	2.7 30	2.5 48	2.8 18	3.0 16	3.9 13	3.0 30	3.1 23	3.2 13	3.2 16
7		3.8 13	2.4 21	2.3 17	3.1 16	3.0 07	2.9 21	2.7 18	2.7 22	3.7 08	4.1 13	3.4 21	3.6 16	2.9 24	3.4 0.9
8		3.7 16	2.4 17	2.3 17	3.0 23	2.6 20	2.8 29	2.4 25	2.4 38	3.3 15	4.0 15	3.5 20	4.0 13	3.1 23	3.6 19
9	N	11	0	0	0	0	1	0	3	1	2	1	2	3	0
	S	7	2	1	5	1	8	5	2	4	12	7	9	15	8
	Sit.	2	6	6	1	1	1	1	0	1	2	0	0	0	0
	M	0	20	14	10	3	1	0	0	2	0	1	1	5	1
10	A	19	4	1	7	2	5	2	3	5	10	8	6	6	3
	D	0	4	2	4	2	3	2	0	4	4	1	3	14	5
	M	1	16	15	5	1	3	3	1	0	0	0	3	3	1

bility coefficients, the tabulated ranges for each psychiatric group for each behavioral category. As such they represent the chief results of the research. These tables are included in detail for two reasons. They establish norms for our experimental material and allow the

interested reader to compare average behavior and the variability of the various groups. To most readers such statistical tables have little meaning so we append a brief account of the actual behavior of each group.

TABLE IV

Showing the Distribution of Scores in Percentages

		I	II	IIA	III	IV	V	VA	VI	VII	VIII	IX	X	XI	XII
1	1–3	00	18	18	13	20	00	00	00	00	00	00	00	00	00
	3.1–4	00	48	64	57	60	54	72	67	20	12	30	17	24	00
	4.1–5	100	34	18	30	20	46	28	33	80	88	70	83	76	100
2	Over 10	10	48	56	32	00	27	29	33	40	00	30	08	18	12
	7–10	20	15	16	13	40	27	42	17	20	12	40	34	22	44
	Under 7	70	37	28	55	60	46	29	50	40	88	30	58	60	44
3	1–3	05	50	52	25	00	18	29	17	10	00	00	00	09	00
	3.1–4	05	18	24	44	60	09	00	33	60	18	40	34	24	33
	4.1–5	90	32	24	31	40	73	71	50	30	82	60	66	67	67
4	1–5	25	82	80	37	80	45	57	83	40	06	40	50	48	22
	5.1–10	00	12	16	50	20	55	43	00	40	35	40	42	45	44
	10–	75	06	04	13	00	00	00	17	20	59	20	08	07	34
5A	1–3	00	09	12	06	00	00	00	00	10	00	10	17	00	00
	3.1–4	00	12	08	19	40	27	00	00	10	24	30	17	12	33
	4.1–5	100	79	80	75	60	73	100	100	80	76	60	66	88	67
5B	1–3	00	62	76	32	40	36	43	33	10	06	10	00	00	00
	3.1–4	00	15	12	44	00	09	00	17	40	12	20	34	15	33
	4.1–5	100	23	12	24	60	55	57	50	50	82	70	66	85	67
6	1–3	25	87	88	81	80	72	72	83	70	18	50	58	54	55
	3.1–4	75	13	12	19	20	18	14	17	20	46	50	25	33	33
	4.1–5	00	00	00	00	00	10	14	00	10	36	00	17	13	12
7	1–3	30	87	92	56	80	73	86	83	10	18	40	33	57	22
	3.1–4	60	13	08	44	20	27	14	00	80	46	30	51	33	66
	4.1–5	10	00	00	00	00	00	00	17	10	36	30	16	10	12
8	1–3	30	91	96	50	80	64	86	83	50	31	40	17	45	33
	3.1–4	50	09	04	50	20	36	14	00	50	25	40	50	48	44
	4.1–5	20	00	00	00	00	00	00	17	00	44	20	33	07	23

Control Group. In so far as this group represents "normal" or "adjusted" individuals we may describe "adjusted" or "normal" reactions to frustrating situations. Cooperation is excellent, and the possible solutions are arrived at rather rapidly and with insight. On interruption there is the tendency to return automatically to the

problem, and to return repeatedly. There is no tendency to be satisfied with irreal or phantasy solutions and practically no tendency to leave the problem psychologically.* Some emotional tension results from the frustration but not an extreme amount. Aspiration is rather high and rises on competition. If the problem of blame or guilt occurs at all it is referred to the self. Behavior in the experimental situation seems similar to real life reactions to frustration.

The control group shows less variability in behavior than any of the psychotic groups and less than most of the psychoneurotic groups. On the whole it is highly standardized. The only strikingly high variability coefficients are on items 2 and 4. Variation in time of solution is probably of no significance for our purposes. The presence of five members out of twenty (cf. Table III) who score very low on item 4 (tendency to resumption) is worth comment however. These five individuals also scored relatively low on items 6, 7, and 8. Follow-up interviews indicated that two of these had definite psychiatric problems (one a severe neurotic depression, the other a wish to "flunk out" of school), and that one other was very doubtful about the existence of a third solution. The other two seemed well adjusted. The individual scoring highest on items 4, 6, 7, and 8 later described himself as a "terribly compulsive sort of guy."

We may roughly characterize the "normal" individual as one who in a blocked goal situation is able to form a segregated tension system, which is persistent but which discharges diffusely on continued frustration without the development of extreme emotional tension. He has a relatively high level of aspiration which reacts upwardly to social pressure.

Non-paranoid Schizophrenia Group. The schizophrenic group deviates most markedly from the normal and shows the greatest variability in itself. This variability is so great that it is almost impossible to speak of a schizophrenic type of reaction to a frustrating situation. Keeping this in mind we may still give an hypothetical picture based on our averages. Cooperation is very poor, solution time very long, insight poor compared with the control group. There is a marked decrease in the tendency to resumption. Pure phantasy solutions occur and there is marked evidence of leaving the field psychologically.† Little emotional tension is developed, the level of aspiration is low and is but little affected by competition. The problem of

* Dembo's (7) experiment on which ours was based varied in so many respects, particularly in the severity of the frustration, that the results of the two set-ups are not comparable. This is mentioned because Dembo's paper reports much greater variability in normal behavior than we found.

† In many cases of course the subject is never "in the field." As was pointed out above, however, we are interested in observing behavior in a "frustrating situation" rather than creating frustration.

blame and guilt is not a real problem nor is that of the "nearness to life" of the experimental situation.

Although many of the schizophrenics were not deficient in *all* the categories, there were *none* completely within the normal range. Some were cooperative and made insightful solutions of the two first sorts but these showed very low tendency toward resumption, very low tension, very low level of aspiration. Others who were uncooperative and showed tendency to "leave the field" showed rather high automatic resumption tendencies but in a manner which can be described to the clinician as schizoid. Two appeared almost normal until the questions for ratings 9 and 10 were asked. These were quite meaningless to them.

The schizophrenic finds it difficult or impossible to set up segregated tension systems with regard to an objective frustrating situation. It is very difficult for him to establish rapport with the examiner. Those tensions set up discharge relatively easily. Emotional tension and aspiration are not developed. Social pressure means little to him.

Paranoid Schizophrenia Group. The behavior of the paranoid schizophrenic falls between that of the control group and the other schizophrenics in practically every respect including that of variability. Although the cooperation score is about the same as in schizophrenia, the paranoid is quicker, shows more insight into the possible solutions. The tendency to resumption is greater than in schizophrenia, and there is less tendency to leave the field psychologically. There is more emotional tension developed, level of aspiration is higher and this is more affected by competition. In a greater percentage of cases the problems of blame and nearness-to-life have some meaning.

The behavior of the paranoid schizophrenic group shows in many respects a great variability and unpredictability of behavior compared with the control group. For this reason the picture given above is a somewhat hypothetical one. Some paranoids showed behavior which approached that of the control group. Others showed behavior which could not be distinguished from schizophrenia. We do think it significant, however, that the group as a whole so clearly distinguishes itself from the non-paranoid schizophrenias.

The reactions of paranoid schizophrenics to a frustrating situation may be summarized as follows. He has some difficulty in setting up isolated tension systems with regard to objective life situations. Those tensions set up discharge quite easily. The emotional tension developed is slight, the aspiration level is definitely subnormal, and social pressure has some effect on it, but again this is subnormal.

Manic-Depressive, Manic Group. The five cases studied here really do not warrant statistical treatment. Since the variability is comparatively small however we may give the behavior of the average or hypothetical case. Cooperation is very poor, but can be established so that the possible solutions are quick and relatively insightful.

The tendency to resume interrupted acts is very slight (even less than in schizophrenia). There is some tendency to leave the field, some emotional tension, a low degree of aspiration which is but little affected by social pressure. The problem tends to be meaningless.

The picture we gain of manic behavior in the test situation correlates very well with our clinical ideas of the manic phase. The individual is able to set up segregated tension systems but these discharge very easily. He has no persistence and is ready to give up under any pretext.

Manic-Depressive, Depressed Group. The manic-depressive depressed individual shows more cooperation than the manics, he is slowed down considerably more than the manic and shows about the same degree of insight. All of these differences are slight and probably statistically unreliable. The higher tendency to resumption, the lower degree of tension, lower level of aspiration, and lesser effect of competition may however represent real differences. The two phases present about the same variability.

Manic-Depressive, Mixed Group. This group is also too small to allow accurate statistical treatment. In general the index figures for it fall between the depressive phase and the manic phase where there are differences between these phases. With the exception of the time differences and the rather marked differences in tendency to resumption all of the manic depressive groups follow a similar pattern.

The major functional psychoses all show striking deviations from the control group. In the case of the psychoneurotic groups and the groups showing defective character, such deviations are not so striking. Each of these categories does show deviations from the normal in respect to some behavior and some of the groups show rather marked deviations in several behaviors. The psychoneurotic group which shows most consistent and significant deviation from the normal is the obsessional-compulsion neurotic group. We may characterize this group as being relatively unable to allow segregated tension systems vicarious discharge on frustration. This viewpoint would fit in very well with our clinical psychiatric picture of the disease. This finding is most clearly seen in Table IV. For behaviorial categories 4, 6, 7, 8 this group has a much higher percentage in the upper ranges. The obsessional compulsion neurotic sets up segregated tension systems with ease but once set up they are "overpersistent," leading to an unusually high degree of tension, unusually high level of aspiration, and a sharp rise in aspiration level under social pressure. They have the feeling often expressed in reply to questions concerning their level of aspiration that, "I must succeed but I am doomed to fail."

The other psychoneurotic and characterologically defective groups do not present so clear a picture. Certain tentative conclusions about them may be made however. The group most clearly approximating the normal is that of the essential hypertension cases. This is worth

reporting because our modern psychiatrical ideas of hypertension would indicate that this disease shows emotional etiological factors but that they are probably deeply unconscious. [Cf. Alexander.[2]] Neurotic depressions and hysteroid neuroses both show slowing down and easy discharge of tensions but otherwise the picture approaches the normal. Neurotic characters (many of whom were also alcoholic) and chronic alcoholics show behavior which is very similar. With the exception of the obsessional-compulsion neurotics however none of these categories can be described psychologically from the result of this experiment alone with much accuracy.

CONCLUSIONS

The results of the observations reported allow us to formulate the following tentative conclusions which are of general psychiatric interest.

1. The behavior of psychotic and psychoneurotic individuals in a frustrating situation is much more variable and unpredictable than is similar behavior by normals. Schizophrenic behavior is most variable of all in this respect. Furthermore the behaviors shown by the variously diagnosed groups show so much overlap that diagnostic categories cannot be said to represent discrete disease entities but rather simply convenient points on some continuum such as regression or retreat from reality. This is not to be taken to mean that the various psychiatric categories vary *only* in this respect. There are undoubtedly other "dimensions" of personality than regression. This conception of mental disease categories is becoming more and more generally accepted and may be said to be a basic concept of psychoanalytic and organismic psychiatry.

2. If the behavior demonstrated by our control group may be looked on as normal or adjusted, the various psychiatric categories may be ordered with regard to deviation from the normal. With regard to the functional psychoses the most deviate group is certainly the schizophrenic, the next most deviate the manic-depressive psychoses, and the least deviate the paranoid psychoses. The obsessional-compulsion neuroses are most clearly distinguished from the control group among the psychoneuroses. This order follows almost exactly that first conceived by Abraham (1) and later developed by many psychoanalysts to describe the depth of libidinal regression in the various mental diseases. Our results thus confirm the psychoanalytic classificatory psychiatry.

3. From the observations reported here there is developed the possibility of the approximate description of personality structure in the various psychoses through use of dynamic conceptions. In nearly every case we have been able to characterize the ease of building and discharge of segregated tension systems, the level of aspiration and the effect of social pressure upon it. These represent only first approximations and further refinements on technique must be found to objectify our rating scales. We have thus far developed only a semi-objective procedure whereby rough index figures may be assigned. From such indices which are of only topological significance at the present time we may hope to proceed to real measurements in time. We believe that our observations indicate the validity of this type of approach in psychopathology and our next step must be further to validate and objectify the methods of observation.

SUGGESTIONS TOWARD FURTHER RESEARCH

Our estimates of tension and of level of aspiration are particularly influenced by the experimenter's subjective impressions. To arrive at a greater validity for estimates of psychological tension some method of physiological index is indicated.

Many methods of recording the physiological concomitants of emotion have been worked out. Most of these are complex however and require the subject to remain at rest. Consequently we could not avail ourselves of the various techniques used by lie-detectors and behavioral multipolygraphs for continuous readings. It is still possible, however, to measure such physiological processes before the experiment, at the time of greatest apparent tension in the experiment, and after the experiment when the subject realizes that the third solution is impossible. At the present time we have such readings of blood pressure on the group of essential hypertension cases. All of these were rated subjectively as showing an increase in emotional tension. In every case the systolic blood pressure rose during the experiment and fell afterwards. A few cases of schizophrenia where the subjective rating of tension was under 2, (i.e. diminished during the experiment), and a few cases of compulsion neurosis where subjective rating of tension was over 4 (i.e. greatly increased during the experiment), showed changes in systolic blood pressure during the experiment. The schizophrenics showed slight drops and the compulsion neurotics slight rises. The data are far too incomplete to attempt any correlation between the sphygmomanometric readings and the experimenter's estimates, but the possibility is developed of gaining a more objective measurement for item 6. We plan to make such sphygmomanometric readings routine.

To arrive at a greater validity for our estimates of aspiration level we have adopted a modification of Kohs[11] block test. The subject is asked to estimate the time he will take on each construction and so sets his level of aspiration. By falsifying to the subject his actual time the experimenter is able to create psychological feelings of success and failure. By reporting falsified norms for others' actual time before having the subject set his own time the experimenter is able to exert social pressure. This test is being standardized and will be reported later in detail.

At the present time this test has been given to twenty schizophrenics, ten paranoid schizophrenics, and ten compulsion neurotics in connection with the main experiment. For these individuals the behavior in the test and the estimate made in the experiment are usually in very good agreement. Although it is too early to report detailed results it seems likely that schizophrenics are unaffected by either success or failure or by social pressure in their level of aspiration and the level of aspiration is not well correlated with the level of attainment. Paranoid schizophrenics are more in touch with reality in this respect. Compulsion neurotics, on the other hand set a high level of aspiration, which is greatly affected by social pressure and success, but which is also not well correlated with the level of attainment, because failure does not tend to lower it. Our experiences with control subjects in this test would indicate a much closer correlation between aspiration and attainment in them than in compulsion neurotics. All of these findings fit well in with the data tabulated in Tables III and IV.

The problem of the reliability of the test also needs to be attacked. The test can not be repeated as in fairness to the patients the "trick" must be shown. Consequently similar frustrating situations must be found as variants. These must be different enough that the subject does not perceive he is again being tricked. So far we have not been able to find variant forms which are enough like the original to allow exact comparison of the various items. Two variants have been used, however, with results which are suggestive.

In the first of these the Hanfmann-Kasanin (9) test of concept formation is given in the following manner. Division of the blocks on the basis first of color and then of form are accepted as the first two solutions. The third solution is made impossible by changing the designations of several of the categories originally set up by Hanfmann and Kasanin.

The second variant is the problem of connecting houses with wells through pipe-lines without having the pipe-lines cross. Two wells may be connected with each of two houses, (the first solution) and

four wells may be connected with each of two houses (the second solution) without any crossing of pipe lines. To connect three wells, however, with each of three houses is topologically impossible. To give this problem spatial objectivity we use small model houses and wells and pieces of string to represent pipe lines.

Both of these variant forms develop behaviors similar to those of our original situation and one at least of them may usually be repeated on subjects previously tested in the original problem. Such repetitions show a similarity of behavior easily discernible to the experimenter.

On most of the subjects tested we have available also Rohrschach tests, I.Q.'s, and Luria technique records of controlled associations. For all of them we have very complete case histories. As data accumulate we hope to make correlations between these variables. We believe the observations with regard to behavior in a frustrating situation may have importance for diagnosis, prognosis, and in evaluating the results of special therapies. [Cf. the suggestions in the paper of Brown and Orbison.[19]]

SUMMARY

In this paper are reported the results of observing the reactions of some one hundred and fifty patients in a frustrating situation and comparing them with twenty control subjects in the identical situation. The mode of observation is that of a controlled interview rather than a precise experiment. From these observations we have devised rating scales of varying objectivity and compared the various psychiatric categories. Some findings of general psychiatric interest are reported. Suggestions towards improving the reliability and validity of the techniques are made. The work continues in progress.

BIBLIOGRAPHY

(1) Abraham, K.: *Selected Papers.* London, L. and V. Woolf, 1927.

(2) Alexander, F.: *The Medical Value of Psychoanalysis.* New York, W. W. Norton, 1936.

(3) Barker, R., Dembo, T., and Lewin, K.: *Experiments on Frustration and Regression.* Univ. Iowa Stud. (in press).

(4) Brown, J. F.: The Modified Dembo Technique. *Bull. Menninger Clin.*, 1:211–219, 1937.

(5) Brown, J. F.: Psychoanalysis, Topological Psychology, and Experimental Psychopathology. *Psa. Quart.*, 6:227–237, 1937.

(6) Cameron, D.: *Objective and Experimental Psychiatry.* New York, Macmillan, 1935.

(7) Dembo, T.: Der Aerger als dynamisches Problem. *Psychol. Forsch.*, 15:1–144, 1931.
(8) Dunbar, H.: *Emotions and Bodily Changes.* New York, Columbia Univ. Press, 1935.
(9) Hanfmann, E. and Kasanin, J.: A Method for the Study of Concept Formation. *J. Psychol.*, 3:521, 1936.
(10) Hunt, J.: Psychological Experiments with Disordered Persons. *Psych. Bull.*, 33:1–58, 1936.
(11) Kohs, S.: *Intelligence Measurement.* New York, Macmillan, 1923.
(12) Lewin, K.: *A Dynamic Theory of Personality.* New York, McGraw-Hill, 1935.
(13) Lewin, K.: Psychoanalysis and Topological Psychology. *Bull. Menninger Clin.*, 1:200–212, 1937.
(14) Maier, N. and Schneirla, T.: *Principles of Animal Psychology.* New York, McGraw-Hill, 1935.
(15) Menninger, K.: Emotional Factors in Hypertension. *Bull. Menninger Clin.*, 2:74–88, 1938.
(16) Rosenzweig, S.: A Test for Types of Reaction to Frustration. *Am. J. Orthopsychiatry*, 5:395–403, 1935.
(17) Smith, J.: *M. A. Dissertation.* University of Kansas, 1937 (unpublished).
(18) Watson, J. B.: *Psychology from the Standpoint of a Behaviorist.* Philadelphia, Lippincott, 1924.
(19) Brown, J. F. and Orbison, W.: A Program for the Experimental Psychological Investigation of Convulsion Therapy. *Bull. Menninger Clin.*, 2:151–154, 1938.

FIFTH ANNUAL POSTGRADUATE COURSE

April 17–22, 1939

The annual Postgraduate Course in Neuropsychiatry will be given again in April 1939 by the staff of the Menninger Clinic. In the four previous years of its existence physicians in general practice, psychiatrists, neurologists, surgeons and other specialists from nineteen states and one foreign country have attended.

Many physicians, realizing the inadequate instruction in psychiatry they had in medical school, and discovering often that as many as fifty per cent of their patients have functional disorders or are "just nervous" or neurotic, have taken advantage of this opportunity to hear a systematic, practical presentation of dynamic psychiatry. For psychiatry no longer deals only with the insane, but with emotional disturbances, minor and major, which produce neurotic illness, maladjustments, behavior disorders and functional diseases in a large part of the population.

The course lasts five and one half days and the enrollment is limited to thirty. The fee of $35.00 includes the noon luncheons which are served at the Sanitarium. Detailed final programs will be ready later and will be mailed on request. Address Dr. Robert P. Knight, The Menninger Clinic, Topeka, Kansas.

The tentative program for 1939 follows:

PROGRAM

MONDAY, APRIL 17

10:00 a.m.	Opening Remarks ..... *C. F. Menninger, M.D.*
10:30 a.m.	Orientation Lecture ..... *Karl A. Menninger, M.D.*
11:30 a.m.	Psychological Factors in Medical and Surgical Conditions ..... *William C. Menninger, M.D.*
2:00 p.m.	Case Presentation, illustrating methods of examination and study of a case
3:00 p.m.	Personality Development: Motives ..... *Douglass W. Orr, M.D.*
4:00 p.m.	Personality Development: Psychic Structure ..... *Karl A. Menninger, M.D.*
8:00 p.m.	Smoker

TUESDAY, APRIL 18

9:30 a.m.	The Neurological History and Examination ..... *Norman Reider, M.D.*
10:30 a.m.	Techniques of Personality Examination ..... *Karl A. Menninger, M.D.*
11:30 a.m.	The "Nervous Breakdown" ..... *Fritz Moellenhoff, M.D.*
2:00 p.m.	Case Presentation, illustrating a "nervous breakdown"
3:00 p.m.	Gastrointestinal Neuroses ..... *William C. Menninger, M.D.*
4:00 p.m.	Differential Diagnosis of Neuroses and Psychoses ..... *Robert P. Knight, M.D.*
8:00 p.m.	Group Discussion of Case Histories presented by members, Moderator: *Karl A. Menninger, M.D.* Assisted by: *Edoardo Weiss, M.D.*

WEDNESDAY, APRIL 19

9:30 a.m. The Special Characteristics of Neurological Disease ... *Norman Reider, M.D.*
10:30 a.m. Schizophrenia ... *Karl A. Menninger, M.D.*
11:30 a.m. Psychotherapy: Principles ... *Robert P. Knight, M.D.*
2:00 p.m. Case Presentation, illustrating a schizophrenic psychosis
3:00 p.m. Psychiatric Hospital Treatment ... *William C. Menninger, M.D.*
4:00 p.m. (A) The Use and Abuse of Sedatives
(B) Handling of Relatives of Mentally Ill Patients ... *Norman Reider, M.D.*

THURSDAY, APRIL 20

9:30 a.m. Depressions ... *William C. Menninger, M.D.*
10:30 a.m. Organic Expressions of Emotional Conflict ... *Karl A. Menninger, M.D.*
11:30 a.m. Psychotherapy: Applications I ... *Robert P. Knight, M.D.*
2:00 p.m. Case Presentation, Depression
3:00 p.m. Symposium on Child Psychiatry—Normal upbringing, normal and abnormal deviations, remedial methods (moving picture demonstrations)
Douglass W. Orr, M.D., Robert P. Knight, M.D., Hanford L. Auten, M.D.
5:00 p.m. Picnic at Indian Hill

FRIDAY, APRIL 21

9:30 a.m. Treatment of Neurological Diseases ... *Norman Reider, M.D.*
10:30 a.m. Psychotherapy: Applications II ... *Robert P. Knight, M.D.*
11:30 a.m. Psychoanalysis as a Method of Psychotherapy ... *Ernest Lewy, M.D.*
2:00 p.m. Case Presentation, illustrating indications for psychoanalytic treatment
3:00 p.m. Psychological Factors in the Relationship of Physician and Patient
Karl A. Menninger, M.D.
4:00 p.m. "Shock" Treatment in Psychiatry ... *Norman Reider, M.D.*
8:00 p.m. Group Discussion of Case Histories presented by members,
Moderator: *Robert P. Knight, M.D.*
Assisted by: *Edoardo Weiss, M.D.*

SATURDAY, APRIL 22

Psychiatric Aspects of Some Clinical Syndromes

9:30 a.m. Cardiac Neuroses ... *William C. Menninger, M.D.*
10:30 a.m. Alcohol and Drug Addiction ... *Robert P. Knight, M.D.*
11:30 a.m. Impotence and Frigidity ... *Karl A. Menninger, M.D.*

BOOK NOTICES

Common Neuroses of Children and Adults. By O. Spurgeon English, M.D., and Gerald H. J. Pearson, M.D. Price $3.50. Pp. 320. New York: W. W. Norton, 1937.

This is a systematic textbook presentation of psychoanalytic psychopathology by a competent analyst and a pediatrician who wrote "Psychiatry in Childhood" for the Oxford Loose Leaf Medicine. The book is well organized, makes judicious use of illustrative case material, and can be heartily recommended for medical students and physicians interested in psychoanalytic psychiatry. (R. P. K.)

Psychotherapy. By Paul Schilder, M.D. Price, $3.50. Pp. 344. New York: W. W. Norton & Co., 1938.

It is unfortunate that this book which has a good title and contains a few good ideas, is on the whole very unsatisfactory because of its loose, obscure style and more particularly because of its essentially hostile attitude toward psychoanalysis, especially the need for the proper training of those essaying to give psychoanalytic treatment. (K. A. M.)

New Frontiers of the Mind. By J. B. Rhine, Ph.D. Price, $2.50. Pp. 274. New York: Farrar and Rinehart, 1937.

The reviewer has found nothing in this publication to make him reverse his often expressed opinion that Rhine's results arise on the basis of as yet undetected sensory cues. The results are undoubtedly not due to chance, but until Rhine performs the controls that the skeptical demand, one can see no advantage in postulating "extra" sensory perception. The data are "hand picked" and the most obvious controls refused. (J. F. B.)

Mental Conflicts and Personality. By Mandel Sherman, Ph.D. Price, $2.25. Pp. 319. New York, Longman's, Green and Co., 1938.

This book gives an excellent description of the main conflict situation and its possible consequences in the development of the human personality. Not one isolated conflict makes a person into a neurotic, but a long series of conflict situations. The genesis and the nature of conflicts are given, later the attitudes toward conflicts, the necessity of every civilization to create conflict situations, the main conflict of inferiority and insecurity, the very important sex conflicts, and the attempt of their solution in neuroses and antisocial behavior are described. (M. G.)

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PUBLICATIONS BY MEMBERS OF THE STAFF

GROTJAHN, MARTIN. Psychoanalysis and Brain Disease; Observations of Juvenile Paretic Patients. *Psychoanalyt. Rev.* 25:149–164, April 1938.

The author has personally observed 32 cases of juvenile paresis in an attempt to determine the practical application of psychoanalysis to these patients. By using the example of alcohol intoxication, he shows that the "body-mind problem" is not a problem of the supremacy of one over the other, but one of their relationship and reaction to each other. Even in organic cases the inner life history is not interrupted and may be investigated by psychological methods and psychoanalysis. He outlines further possibilities of psychoanalytic studies in patients with brain disease.

MENNINGER, WILLIAM C. AND SHIFFLET, BYRON L. Psychologic Aspects of Physical Therapy. *Archives of Physical Therapy*, 19:533–539, September, 1938.

The authors discuss the psychological factors operative in both the application and results obtained in physiotherapy. They suggest that the beneficial effect, in part, may be due to satisfaction of psychological needs, and that these needs can be determined and utilized in the prescription of definite procedures.

KNIGHT, ROBERT P. The Psychoanalytic Treatment in a Sanatorium of Chronic Addiction to Alcohol. *J. A. M. A.*, 111:1443, October 15, 1938.

The author attempts in non-technical terms to discuss the application of psychoanalytic principles to the sanatorium regimen and the use of psychoanalytic technique in the individual psychotherapy of chronic addicts to alcohol. Interference by the relatives and difficulty in keeping the patients in treatment long enough are two main obstacles. Alcoholics are classified as "essential," "reactive" and "symptomatic," these groups being differentiated in the discussion. The prognosis for most alcoholics is doubtful but combined sanitorium care and psychoanalysis is recommended as the treatment most likely to accomplish a permanent personality change. Results on twenty cases treated by the author are summarized.

MENNINGER, WILLIAM C.: Psychiatry in Nursing Education, *Forty-fourth Annual Report of the National League of Nursing Education*, 1938.

The paper maintains that psychiatry should be included as a fundamental subject in the educational curriculum of all nurses and that it not only should be presented in lectures but that every nurse should have experience in a psychiatric institution—not because she may do psychiatric nursing, but because she is then prepared to meet the psychological component present in every illness.